



June 2023

# Deploy a Location Sharing Solution with ArcGIS Survey123

Essential tasks and best practices for deploying a location sharing solution with ArcGIS Survey123.



# Overview

TASK	COMPLETE
1. <a href="#">Introduction</a>	<input type="checkbox"/>
2. <a href="#">Account requirements</a>	<input type="checkbox"/>
3. <a href="#">Considerations</a>	<input type="checkbox"/>
4. <a href="#">Configure user types and roles</a>	<input type="checkbox"/>
5. <a href="#">Create tracking content</a>	<input type="checkbox"/>
6. <a href="#">Enable location sharing in Survey123</a>	<input type="checkbox"/>
7. <a href="#">Start sharing locations</a>	<input type="checkbox"/>
8. <a href="#">Learn more</a>	<input type="checkbox"/>
9. <a href="#">FAQ</a>	<input type="checkbox"/>

# 1. Introduction

Location sharing is a capability offered with [ArcGIS Survey123](#) that allows you to monitor where mobile workers are and understand where they've been. Here are some examples of why you might implement location sharing into your workflows:

- **Monitor special events**—Know where your personnel are during large scale events to ensure safety and provide quick response times.
- **Provide proof of work**—Verify on-site inspections completed by your team.
- **Determine area coverage**—Determine area coverage during events such as invasive species removal or search and rescue missions.

Location sharing is supported on ArcGIS Online and ArcGIS Enterprise. Follow along with this guide to successfully deploy location sharing with Survey123.

*Note: For more detailed information about the location sharing capability, see [Enable location sharing in ArcGIS Online](#) or [Configure location sharing in ArcGIS Enterprise](#).*

## Key components

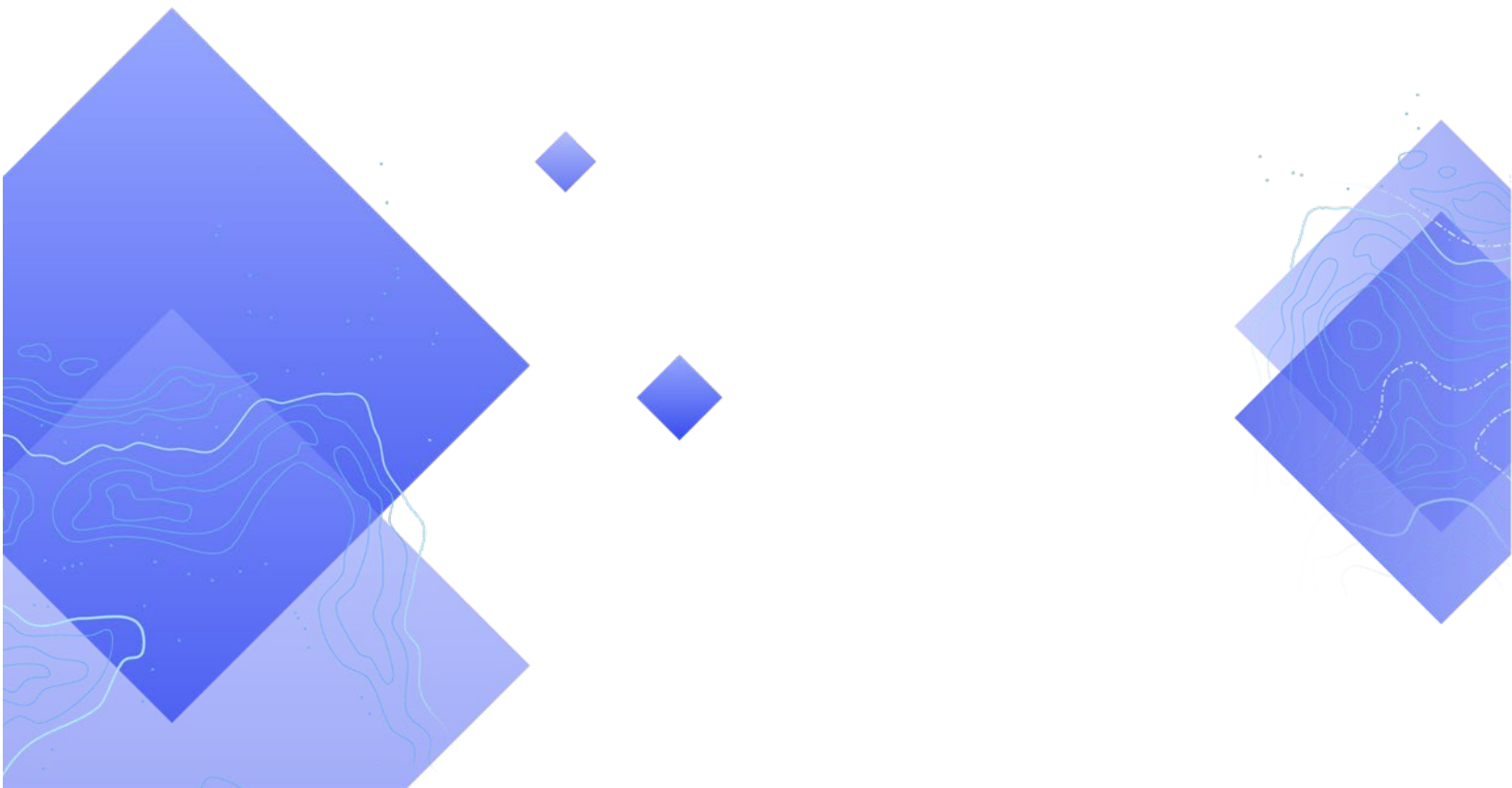
There are three necessary components for deploying the location sharing capability with ArcGIS Survey123:

- **Location sharing feature layer**—Tracks and last known locations are uploaded from Survey123 to the location sharing feature layer. Location sharing is available across your organization and can be enabled by any administrator. Once location sharing has been enabled, licensed users in your organization can use the Survey123 mobile app to upload their historical and current locations to the location sharing layer. Users only see their own tracks, and additional permissions are required to view the tracks of others.

The location sharing feature layer consists of three layers:

- **Last known locations**—A point layer that contains a single record for each user representing their most recently reported location.
- **Tracks**—A point layer that contains a record for each location where a mobile worker was tracked (a breadcrumb trail).
- **Track lines**—A polyline layer that contains lines showing where the mobile worker has been (ArcGIS Online only).

- **Track views**—Tracks and last known locations can be shared with other users in the organization via track views. A track view is a special type of feature layer that requires an additional privilege to use. A track view contains a list of mobile users whose tracks are displayed as well as a separate list of track viewer users who are allowed to view the tracks. Like any other feature layer, track view layers can be used in maps, dashboards, and apps.
- **Survey123 field app**—Tracks and last known locations are uploaded from the Survey123 field app to the location sharing layers. Survey123 records tracks whether or not there is a data connection and can provide mobile workers with control of when they are and are not tracked.



## 2. Account requirements

Before you can deploy a location sharing solution, your organization must meet the following requirements:

- Location sharing user type extensions must be included in your subscription.
- Location sharing must be enabled for your organization.

### License location sharing

Location sharing requires an organization extension and a user type extension for each mobile worker. There are two ways that a user can be licensed:

- **Assign a Mobile Worker user type**—The location sharing user type extension is included in the Mobile Worker user type.
- **Assign an add-on ArcGIS Location Sharing user type extension**—The location sharing user type extension can be added to any user type, including Viewer.

For more information, see [How do I setup location sharing and authorize Survey123](#).

### Enable location sharing

For mobile workers to upload tracks, the location sharing capability must be enabled for your organization. This must be done by an administrator. Tracks stored in ArcGIS Online are retained using a 30-day rolling window and there is no additional storage cost. In ArcGIS Enterprise, additional configuration options are available.

- See [Enable location sharing in ArcGIS Online](#)
- See [Configure location sharing in ArcGIS Enterprise](#)
- See [ArcGIS Tracker Deployment Guide for ArcGIS Enterprise](#)

## 3. Considerations

It's important to understand how location sharing data will be used by stakeholders. Consider the following questions before you begin configuring user types and creating location sharing content:

- Do mobile workers need to see each other's locations in near real-time?
- Do the locations of mobile workers need to be displayed in a dashboard?
- How should the locations of mobile workers be visualized?

### Do mobile workers need to see each other's locations?

For many tracking deployments, it's critical that mobile workers can see where other workers are at any time. This is supported in Survey123, but requires [additional steps to configure](#). Create a .csv file or a list of all the users who need to view other users' tracks.

### Do the locations of mobile workers need to be displayed in a dashboard?

You can use [ArcGIS Dashboards](#) to display the last known locations of mobile workers. A dashboard can be displayed in an emergency operating center (EOC) during an event where situational awareness is critical. Dashboards can also be shared with additional stakeholders as necessary. See [Add the map to a dashboard](#).

### How should the locations of mobile workers be visualized?

It's important to understand if locations need to be visualized based on the mobile worker's role (for example, a paramedic), their last update time, or any other attribute. If symbolizing by roles, make sure you know how and when roles may change. It's also important to know if the historical tracks and lines need to be displayed in the map, app, or dashboard you're using.

## 4. Configure user types and roles

There are two personas in a location sharing solution: mobile workers and track viewers. Each persona requires specific privileges and licenses. A mobile worker can also be a track viewer if they need to view the tracks of other mobile workers. Configure user types and roles for a location sharing solution by completing the following steps:

- Add users to your organizations
- Configure user type extensions for mobile workers
- Configure track viewer roles

### Add users to your organization

If you are deploying a tracking solution for the first time, you may need to add new users to your organization. This can be done quickly by importing users from a .csv file.

- See [Invite or add members in ArcGIS Online](#)
- See [Add members to your portal in ArcGIS Enterprise](#)

### Configure user type extensions for mobile workers

Each mobile worker who needs to be tracked must have a location sharing user type extension. This can be done by setting their **User Type** to **Mobile Worker** or by assigning an **ArcGIS Location Sharing** user type extension.

- See [User types, roles, and privileges in ArcGIS Online](#)
- See [User types, roles, and privileges in ArcGIS Enterprise](#)
- See [Manage licenses in ArcGIS Online](#)
- See [Manage licenses in ArcGIS Enterprise](#)

## Configure track viewer roles

To view the tracks of mobile workers, a user must have the **View location tracks** privilege assigned to their role. The easiest way to do this is by creating a new custom role that includes this privilege. Assign this role to each user who needs to view the tracks of other mobile workers.

*Note: Depending on the current roles assigned to your users, you may need to change existing roles or create additional roles with more privileges.*

- See [User types, roles, and privileges in ArcGIS Online](#)
- See [User types, roles, and privileges in ArcGIS Enterprise](#)
- See [View tracks in the Track Viewer web app in ArcGIS Online](#)
- See [View tracks in the Track Viewer web app in ArcGIS Enterprise](#)



## 5. Create tracking content

Once location sharing has been enabled for your organization and users are configured, build the maps and apps that mobile workers use to track location and monitor activity. Complete the following steps:

- Create a track view.
- Add a track view to a map.
- Add a map to a dashboard.
- Configure a map for mobile users.

### Create a track view

Track views are created in the Track Viewer web app. Select the mobile users who should appear in the track view and which users can view those tracks. Once completed, a hosted feature layer view and a group in ArcGIS Online or ArcGIS Enterprise that controls access to the track view are also created. The layer is available to use in maps and apps, including Track Viewer.

*Note: You can share the track view with users outside your organization by inviting them to the group created with the feature layer view. For users to access the track view, the administrator for their organization must assign the **View location tracks** privilege to their role.*

- See [Create tracks in track viewer in ArcGIS Online](#)
- See [Create tracks in track viewer in ArcGIS Enterprise](#)
- See [Overview of the location sharing schema](#)

### Add a track view to a map

Use Map Viewer to create a new map or open an existing one and add the track view feature layer to the map. Each layer should be configured to suit your specific requirements, but here are some general recommendations.

## *Layer visibility*

The last known locations layer should be the first layer listed in the map so it draws on top of every layer listed below it. To improve overall performance when panning and zooming the map, set the **Visible range** of the tracks layer from **Street** to **Room**. Similarly, for the track lines layer, set the **Visible range** from **World** to **Street**.

- See [Set transparency and visible range \(Map Viewer\)](#)

## *Layer filters*

Apply a temporal filter to all three location sharing layers to avoid showing unnecessary or stale data (for example, showing outdated location timestamps).

- See [Apply filters \(Map Viewer\)](#)

## *Layer refresh intervals*

Refresh intervals determine how frequently layers are updated in the map. The last known locations layer should have a relatively short interval (30 seconds to a minute). This ensures the map accurately reflects where someone is as they move. The track points and track lines layers should use a longer interval (5 to 10 minutes) since those are uploaded less frequently.

- See [Set refresh interval \(Map Viewer\)](#)

## *Layer symbology*

The three most common ways to symbolize track data are by location, name, or category or role.

### *Symbolize by location*

The default drawing style for each location sharing layer is **Location (single symbol)**. Each user and their tracks are symbolized using the same colors and symbols.

### Symbolize by name

If mobile users do the same type of work, it may make sense to use a different color to more easily identify specific mobile users. In this case, a **Types (unique symbols)** drawing style should be used with the **Full Name** or **Created User** attribute.

### Symbolize by category or role

When there are multiple groups of mobile users, it may make sense to symbolize each user based on their role or the type of work they do. For example, all police officers could be blue, and all firefighters could be red. In this case, a **Types (unique symbols)** drawing style should be used with an Arcade expression that returns a category for a given feature.

Here is a sample Arcade expression that determines if a feature should be categorized as Firefighter or Police Officer:

```
var fireFighters = ['username1', 'username2']
var policeOfficers = ['username3']

if (includes(fireFighters, $feature.created_user)) {
  return 'Firefighter'
}

else if (includes(policeOfficers, $feature.created_user)) {
  return 'Police Officer'
}
```

- See [Style location \(Map Viewer\)](#)
- See [Style categories \(Map Viewer\)](#)
- See [Getting Started with ArcGIS Arcade documentation](#)
- See [Generate a user-based Arcade expression](#)

## Add a map to a dashboard

Once you've configured a map for location sharing, add it to a dashboard in ArcGIS Dashboards. This dashboard can be shared with stakeholders so they can see where mobile users are in near real-time. Once the map is added to the dashboard, you can add additional dashboard elements such as indicators and lists.

Make sure you share your dashboard with the track viewers group. For security and privacy, the location sharing layers cannot be shared publicly, so your dashboard and maps should not be shared publicly.

- See [Create a dashboard](#)
- See [Create a location sharing dashboard](#)

## Configure a map for mobile workers

You may want to create a separate map for mobile workers. To get started, make a copy of the map you configured for track viewers and make adjustments as needed. For example, if mobile workers do not need to see each other's locations, you can remove the track view layers from the map.

*Note: It is not necessary to have a track view layer in the map to record and share tracks.*

In Survey123 designer you can change the basemap that is shown in your project. By default, the organization default basemap will be used. To change the basemap complete the following steps:

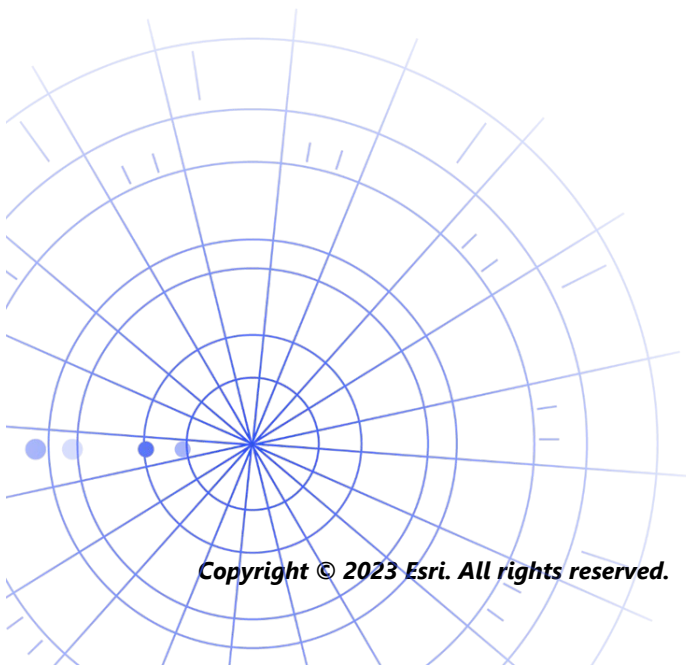
1. Click the **Configure project map** menu item
2. Uncheck the **Use organization default basemap** option
3. Click **Change**
4. Select the mobile worker basemap that you created
5. Click **Save**

## 6. Enable location sharing in Survey123

Once location sharing is enabled in the organization, an organization administrator can configure how location sharing will be used in the Survey123 field app, on the **Settings** tab of the **Organization** page of the Survey123 website.

If location sharing is configured to be required, the field worker cannot turn it off. If it is not required, the field worker can start or stop location sharing when they choose.

The organization administrator can also choose to record tracks, the last known location, or both. Tracks are uploaded every 10 minutes, and last known locations every 1 minute.



## 7. Start sharing location

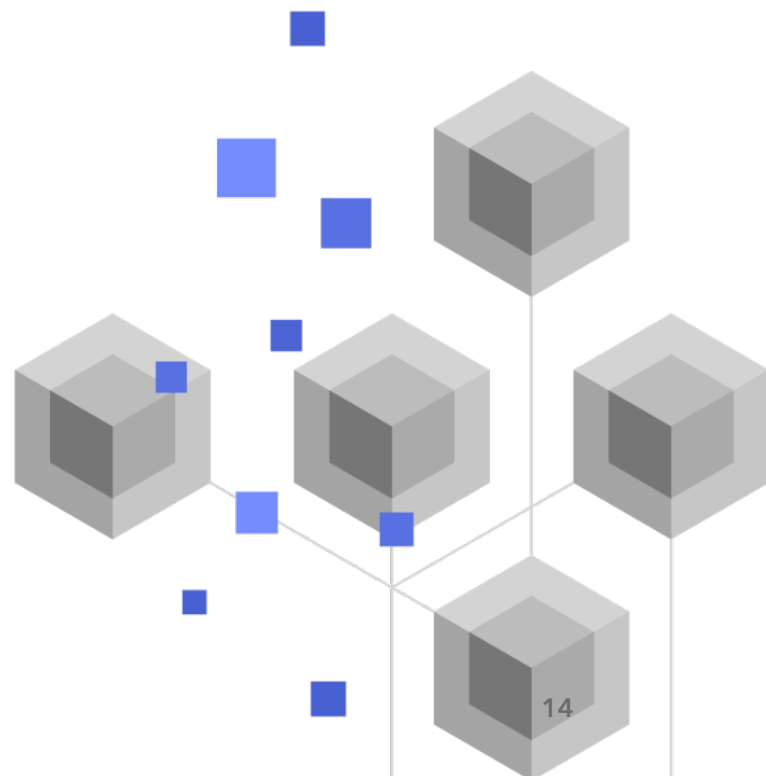
Once users and the field app are configured for location sharing, mobile workers can start recording their locations. Location sharing works offline too—when a worker regains connectivity, the tracks and last known location will automatically upload to the location sharing layer.

First, account credentials should be assigned to each user so they can sign in to the mobile app. Next, instructions should be provided to mobile users about how to get started.

At a high level, the following steps should be provided to mobile users in an instruction manual:

1. Download the Survey123 field app from the Apple App Store, Google Play Store, or Microsoft Store.
2. Launch the app.
3. Sign in with credentials.
4. Accept the permission prompts for location and tracking.

*Note: Mobile workers may not have to download the field app if a mobile device management solution (MDM) is used.*



## 8. Learn more

There is so much more you can do with location sharing in ArcGIS Survey123. The resources in this section will help you explore more opportunities as well as help you troubleshoot and answer questions.

- Join the [ArcGIS Survey123 Community](#). You can join discussions with a diverse group of ArcGIS Survey123 users and Esri staff.
- Read [articles from the ArcGIS Survey123 team](#) on the [ArcGIS Blog](#).
- Browse the [ArcGIS Survey123 Resources page](#). This is your hub for all things ArcGIS Survey123—documentation, blogs, videos, learning materials, and more.

### Troubleshooting and support

Looking for assistance with ArcGIS Survey123? Check out the following:

- The ArcGIS Survey123 [help](#) is searchable by keyword and contains documentation for everything from designing layers and maps to configuring forms and using the app.
- Consult the [ArcGIS Survey123 Community](#) and get specific answers from peers and members of the ArcGIS Survey123 team.
- If you've tried the options above and still need assistance, contact [Esri Technical Support](#) for technical issues or [Esri Customer Service](#) for licensing questions.

## 9. FAQ

### How do I get the app?

The ArcGIS Survey123 field app is available on [Google Play](#) for Android devices, the [App Store](#) for iPad and iPhone, and [Microsoft Store](#) for Windows devices.

*Note: If you can't access Google Play or the Microsoft Store, download from the [Survey123 Resources page](#).*

### Can I change the upload frequency of tracks?

Tracks are uploaded every 10 minutes, this frequency can not be changed.

Separately, the last known location of the mobile device is updated every 60 seconds by default.

### How can I analyze the track data?

Tracks can be [exported](#) from ArcGIS Online, and tools in ArcGIS Pro can be used to gain insights into the data. If using ArcGIS Enterprise, you can use [ArcGIS GeoAnalytics Server](#) to directly analyze the features stored in the location sharing layers.